Instruction Manual

Thermo Scientific Savant®DNA120, DNA120 OP SpeedVac® Concentrators

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1.0 INTRODUCTION

TheThermo Scientific Savant® DNA SpeedVac® Model DNA120, is a dedicated centrifugal vacuum concentration system for drying low volume ethanol or isopropanol-water precipitates of DNA and RNA. The Thermo Scientific Savant DNA120OP allows for additional drying down of synthetic oligos in Ammonium Hydroxide (NH_4OH). This design incorporates a glass cover, ammonia post-trap and Ammonia Neutralizing Solution for fully automated, unattended, odor-free drying. The post-trap is connected on the back, left side of the unit. It is easily maintained and replaced. The Thermo Scientific Savant DNA SpeedVac combines centrifugal force with vacuum for bump-free sample drying. Vacuum is supplied by an integral, oil-free vacuum pump with an automatic bleeder valve.

The Thermo Scientific Savant DNA120 SpeedVac has a chamber heater that counteracts evaporative sample cooling and accelerates solvent evaporation rates to shorten drying times. The operator can select LOW (ambient), MEDIUM (43 °C), or HIGH (65°C) drying rates with the 3-position switch on the front panel.

Several different microcentrifuge tube rotors are available for drying ethanol precipitates of DNA/RNA, isopropanol-water mixtures, amplified reaction products in buffer, aliquots of radiochemicals, or other low-volume samples (see section 5). A unique swing-out rotor (RD2MP) for microplates is available as well.

The Thermo Scientific Savant DNA SpeedVac is equipped with polypropylene vacuum fittings to avoid leaks and resist corrosion. A chemical trap kit (DTK120R) and disposable cartridge (DC120R) should be used for trapping volatile radioactivity when the system is dedicated for drying down radiolabeled materials.

NOTE: To assure safe operation and best results, read this manual in its entirety before operating this instrument.

RECEIVING Inspect the shipping carton upon receipt. If the carton is damaged in anyway, do not accept delivery. Contact Thermo Scientific.

UNPACKING Carefully remove the instrument from its shipping carton. Compare the packing list to the box contents. If there is a discrepancy contact Thermo Scientific.

INSPECTION Inspect the unit for any damage that may have occurred during shipment. Should there be any damage, report it to the carrier and contact Thermo Scientific immediately. Make sure the carrier inspects the damage and leaves an inspection report. Register any claims for shipping damage against the carrier or his agent. Save the shipping carton in the event a return is necessary.

2.0 INSTALLATION (cont'd)

SET-UP

- Install the system on a stable surface that is clean, dry, level, and within 4 feet (1.2 meters) of a compatible electrical outlet.

- Connect power cord to receptacle on the left side of the instrument and plug into appropriate outlet. The cover latch mechanism releases automatically.

WARNING: Before connecting the DNA120 to an outlet, make certain that voltage,frequency, and amperage match the DNA120 requirements indicated on the label on the left-hand side of the instrument (120VAC / 60 Hz, 10 A or 230 VAC / 50 Hz, 5 A). If there are any questions, please consult an electrician.

- Place rotor on the drive shaft in the sample chamber. **Hand-tighten** the hold-down knob until firmly seated.

CAUTION: Use only Thermo Scientific designed rotors in the Savant DNA SpeedVac®.

- **For 230 VAC / 50 Hz, 5 A units only:** A safety latch prevents the Savant DNA SpeedVac lid from operating until power is applied to the system. **Do not attempt to open the lid unless the unit is plugged in.**

3.0 OPERATION

The switches on the front panel control operation of the Thermo Scientific Savant DNA SpeedVac. The LED readout displays "run" parameters in minutes. You may choose between three drying rates (LOW/MEDIUM/HIGH).

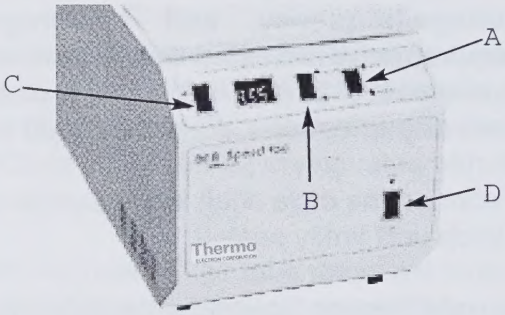
Approximate Drying Times					
Solvent	Volume/ Tubes	Number of tubes	Time to dryness at drying rate:		
			LOW	MEDIUM	HIGH
Ethanol	0.5 ml	12	60± 5 min.	35± 5 min.	25± 5 min.

Table 1: Ethanol drying in the Thermo Scientific Savant DNA SpeedVac. Drying times presented as a guide only. Each system may vary slightly. The solvents used, and type and quantity of solutes, also effect drying time. Thermo Scientific Savant DNA SpeedVac Test Conditions: RD24 rotor with 12 x 1.5 ml tubes.

3.0 OPERATION (cont'd)

ROTOR INSTALLATION. Open the lid of the rotor chamber. Carefully lower the rotor onto the drive shaft. Secure the assembly by screwing the retaining knob into the drive shaft above the rotor. Tighten it firmly but not excessively. Load the rotor and close the lid. Always balance rotor loads. There need not be a tube in each hole, but the load must be evenly distributed.

USING THE CONTROL PANEL



A. OPERATING MODE SWITCH (see section 3.1)

AUTO	Press to start a run with automatic shut-off
OFF	Press to stop any run
MANUAL	Press to start a run with manual shut-off

B. TIMER SELECTION SWITCH (see section 3.1)

HEATER	Press to select Heater timer
RUN	Press to select Run timer

C. CHANGE SETTING SWITCH (see section 3.2)

Press to increase value of timer selected by switch B
Press to decrease value of timer selected by switch B

D. DRYING RATE SWITCH (see section 3.6)

LOW	Concentrator chamber at ambient temperature
MEDIUM	Maintains chamber at 43°C
HIGH	Maintains chamber at 65°C

3.1 MODE SELECTION

The dual timer front panel permits operation of the Savant DNA120 in one of the two modes. Select switch A to either:

• **MANUAL**-to initiate a concentrator run that you can start and stop manually. The run starts when switch A is set to "MANUAL" when switch A is set to "OFF". The unit will end the concentrator run.

or

•**AUTO**-to start a concentrator run for a predefined time interval. The run starts when switch A is set to"AUTO". The run stops automatically at the end of the predefined time selected. The front panel maintains two independent timers (switch B).

• **RUN**-timer measures the duration of the current run. You can view or change this timer, (using switch C) when switch B is set to "RUN".

Each of the above consists of a user-specified target setting and a timer of actual elapsed time.

A three-digit display shows hours and minutes. A decimal point separates hours from minutes. For example, 9.55 indicates 9 hours and 55 minutes. The display can be set to show either the setting or the elapsed time.

The decimal point flashes when a run is in progress (auto run or manual run). The decimal point is always lit when a run is not in progress.

3.2 SETTING A TARGET TIME

Actual elapsed time can be viewed during a run or at the end of a run. When switch A is set to "OFF", both timers are at 0.00 (0 hours and 0 minutes). You can change the settings only when switch A is "OFF"; settings cannot be changed during a run.

Set switch B to "RUN" to view or change the run timer. Set switch B to "HEATER" to view or change the heater timer.

When you do not set a run time the timer counts upward (time elapsed). When a time limit is set, the timer counts down; the display indicated the time remaining.

Using switch C increases or decreases the time setting in 5 minute increments to to 9.55 (9 hours, 55 minutes) holding down switch C allows you to rapidly scroll thru the settings until you release the switch.

• When setting the heater timer, above 9.55 (or below 0.05) there exists a setting of "CCC" (for continuous HEATER operation), and "OFF" (for HEATER off).

3.3 EXAMPLE OF A MANUAL RUN

Switch A should be "OFF".

Set switch B "HEATER" to bring the HEATER time to the display. Adjust switch C until the display shows the desired setting for HEATER. You can select:

- "OFF"-to disable the HEATER.

or

- "CCC"-to operate the HEATER for the duration of the run.

or

- A specified length of time. The HEATER switches off at the end of this time interval. If a longer time than specified run time is specified, then the HEATER shuts off at the end of the run.

Start the run by setting switch A to "MANUAL".

During the run, you can toggle the unit to display the following information.

- Elapsed run time. Set switch B to "RUN". Since there is no present run time, the display counts upward, showing the hours and minutes that have elapsed in the current run.

or

- Remaining heating time. Set switch B to "HEATER". If a specific time setting for the HEATER is selected, then the display counts down and shows it.

3.4 EXAMPLE OF AN AUTO RUN

Switch A should be "OFF".

Before starting the Auto Run, specify, a run time as follows:

Set switch B to "RUN". Adjust switch C until the display shows the desired duration of the run in hours and minutes.

Start the run by setting switch A to "AUTO".

During the run, you can toggle the unit to display the following information:

- Remaining run time. Set switch B to "RUN". The display now counts downward, showing the hours and minutes of time left in the current run.

or

- Remaining heater time. Set switch B to "HEATER". If a specific time setting is selected for the HEATER, then the display counts down and indicates the amount of time remaining before the HEATER shuts off.

To terminate a run, set switch A to "OFF".

3.5 DRYING RATE

Thermal energy can be applied to the concentrator chamber to counteract the cooling effect of evaporation, it maintains samples in the liquid state, and accelerates the concentration run. The DRYING RATE switch selects the desired drying rate:

"LOW" maintains the concentrator chamber at ambient temperature.
"MEDIUM" maintains the concentrator chamber at 43° C.
"HIGH" maintains the concentrator chamber at 65° C.

Select the highest drying rate if you desire accelerated drying. To ensure against overdrying of samples, and possible denaturing, it is recommended that the HEATER timer be set for only a portion of the total run time (e.g., 50%-75% of total run time).

4.0 SPECIFICATIONS (Subject to change without notice)

Input power:	120 VAC / 60 Hz, 10A or 230 VAC / 50 Hz, 5A
Vacuum Chamber:	TEFLON® coated aluminum casting
Cover:	• Transparent acrylic (DNA120) 230 VAC / 50 Hz unit include a safety interlock • Glass cover (DNA120OP) w/ safety interlock
Drive & Speed:	Maintenance-free induction motor; 1725 RPM with magnetic coupling to rotor drive shaft RCF approximately 300 *xg*
Capacity:	24 x 1.5 ml tubes (RD24 rotor) 36 x 1.5 ml tubes (RD36 rotor) or 48 x 0.5 ml tubes (RD48 rotor) 72 x 0.5 ml tubes (RD72 rotor) or 2 microplates (RD2MP rotor)
Chamber temperature:	Controlled at ambient, 43° C, or 65° C with over-temperature safety shut-off
Weight:	86 lbs. (39 kg)
Dimensions (W x D x H):	11 in. x 25 in. x 11 in. (29 cm x 63 cm x 29 cm)
Pump:	oil-free diaphragm
Displacement:	36 l/min at 60 Hz 30 l/min at 50 Hz
Ultimate Vacuum Level:	7 torr (9 mbar)
Registration:	ISO 9001-1994. Registered by QMI (Quality Management Institute). Certificate number 001080.

5.0 ACCESSORIES

RD24	24 x 1.5 ml tubes
RD36	36 x 1.5 ml tubes
RD48	48 x 0.5 ml tubes
RD72	72 x 0.5 ml tubes
RD2MP	2 microtiter plates
ANT100	Post-trap assembly (standard ONLY on DNA120 OP model)
ANS121/4	Ammonia neutralizing solution 4 bottles (for/DNA120 OP)
GSC100	Glass safety cover (standard on DNA120 OP)
DTK120R	Chemical Trap Kit for processing radioactive samples; connects to DNA SpeedVac® exhaust port.Includes SCT120 Chemical Trap, tubing, DC120R Disposable Cartridge
DC120R	Disposable Cartridge for trapping volatile radioactivity
DC120R/4	Disposable Cartridge for trapping radioactivity, package of four

APPENDIX 1
PROPER HANDLING OF HAZARDOUS EXHAUST VAPORS

Some drying applications produce exhaust vapors that are hazardous. Even small volume samples, dried rapidly in quantity in the DNA SpeedVac®, in aggregate can emit volatile solvents to the atmosphere. Add a post-trap or a chemical trap.

For samples labeled with radioactivity, Thermo Scientific strongly recommends an adsorbent filter be attached to the DNA SpeedVac exhaust port. This prevents release into the laboratory environment. The DTK120R Chemical Trap Kit traps volatile radioactivity and organic solvent vapors. Periodically, the exhaust from the DTK120R Chemical Trap should be monitored for radioactivity to make sure the filter cartridge is not depleted. A typical configuration is shown in Figure 1, shown on page 6.

For questions regarding a specific application, contact Thermo Scientific.

APPENDIX 2
OPERATING HINTS

(1) Prewarm the chamber, set switch B "Heater" to med setting 10 to 15 minutes prior to placing samples into the rotor.

(2) When the total volume of sample exceeds 6 to 8 ml per run, a small amount of aerosol is created at exhaust port. Use the post-trap assembly to collect the condensate (ANT100).

(3) The DNA SpeedVac is compact enough to place in a laboratory fume hood, if necessary.

(4) Before using the DNA SpeedVac for applications other than those recommended, contact Thermo Electron for additional information.

Trapping exhaust vapors containing volatile radioactivity with the DNA SpeedVac®

Change the disposable cartridge DC120R every month if system is used everyday.

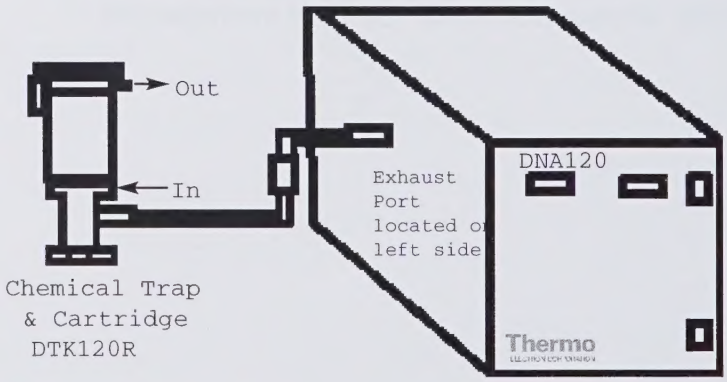


FIGURE 1. DTK120R CHEMICAL TRAP KIT

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Great Britain

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France

Important

For your future reference and when contacting the factory, please have the following information readily available:

Model Number: _____

Serial Number: _____

Date Purchased: _____

The above information can be found on the dataplate attached to the equipment. If available, please provide the date purchased, the source of purchase (manufacturer or specific agent/rep organization), and purchase order number.

IF YOU NEED ASSISTANCE:

SALES DIVISION

Phone: 1-866-984-3766 (866-9-THERMO)

LABORATORY PARTS and SERVICE

Phone: 1-800-438-4851

TECHNICAL SUPPORT

Phone: 1-800-438-4851

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